

REMARKS

Claims 1-10 were examined and reported in the Office Action. Claims 1-10 are rejected. Claims 1-10 are amended. Claims 1-10 remain.

Applicant requests reconsideration of the application in view of the following remarks.

I. 35 U.S.C. §112

It is asserted in the Office Action that claims 1-10 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended the claims to overcome the 35 U.S.C. §112, second paragraph rejections.

Accordingly, withdrawal of the 35 U.S.C. §112, second paragraph rejections for claims 1-10 are respectfully requested.

II. 35 U.S.C. §102(e)

It is asserted in the Office Action that claims 1-4, 6, 8, and 9 are rejected under 35 U.S.C. §102(e), as being anticipated by U. S. Patent No. 6,049,614 issued to Kim ("Kim"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

According to MPEP §2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' (Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). 'The identical invention must be shown in as complete detail as is contained in the ... claim.' (Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)). The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, *i.e.*, identity of terminology is not required. (In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990))."

Applicant's amended claim 1 contains the limitations of "[a] sender device for sending an encrypted information signal, the device comprising: means for generating chaotic signals comprising a source producing a chaotic signal and provided with a feedback loop comprising means for generating time delay, and a non-linear circuit element, means for producing the encrypted information signal comprising a mixer circuit element to inject an information signal to encrypt the information signal, received on one input, into the chaotic signal propagating in the feedback loop, received on another input, wherein the feedback loop includes means for filter-forming to limit the spectrum of the chaotic signal to one or more spectrum bands."

Applicant's claimed invention proposes an approach of synchronization specific to delay non-linear dynamical systems. Applicant's claimed invention includes a chaos signal generator based on a voltage controlled oscillator operating with a delayed non-linear feedback circuit including a delay line element. Therefore, the chaotic signal is obtained as a function of time is governed by time delay non-linear differential equations.

Kim discloses a form of transmitter-receiver synchronization where the transmitter and receiver are classical dynamical systems and delay line elements are not included in the feedback loops. The chaotic signal in Kim is obtained as a function of time and is governed by ordinary non-linear differential equations. Moreover, Kim does not teach, disclose or suggest "means for generating chaotic signals comprising a source producing a chaotic signal and provided with a feedback loop comprising means for generating time delay, and a non-linear circuit element, means for producing the encrypted information signal comprising a mixer circuit element to inject an information signal to encrypt the information signal, received on one input, into the chaotic signal propagating in the feedback loop, received on another input, wherein the feedback loop includes means for filter-forming to limit the spectrum of the chaotic signal to one or more spectrum bands."

Therefore, since Kim does not disclose, teach or suggest all of Applicant's amended claims 1 limitations, Applicant respectfully asserts that a *prima facie* rejection

under 35 U.S.C. § 102(e) has not been adequately set forth relative to Kim. Thus, Applicant's amended claim 1 is not anticipated by Kim. Additionally, the claims that directly or indirectly depend on claim 1, namely claims 2-4, 6, 8 and 9, are also not anticipated by Kim for the same reason.

Accordingly, withdrawal of the 35 U.S.C. §102(e) rejections for claims 1-4, 6, 8, and 9 are respectfully requested.

III. 35 U.S.C. § 103(a)

A. It is asserted in the Office Action that claim 10 is rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over Kim, in view of U. S. Patent No. 5,729,607 issued to DeFries ("DeFries"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

According to MPEP §2142 "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Further, according to MPEP §2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." "*All words in a claim must be considered* in judging the patentability of that claim against the prior art." (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added.)

Applicant's amended claim 10 depends on amended claim 1. Applicant has addressed claim 1 regarding Kim above in section I.

Applicant's claimed invention discloses a system for scrambling an information signal where the information signal is injected into the feedback loop of a chaotic signal generator and influences the dynamics of the transmitter. Therefore, the information signal is involved in the synchronization. Moreover, Applicant's claimed invention uses a unique transmission carrier for the synchronization between the transmitter and the receiver and the transmission of the encrypted information signal.

Applicant's claimed invention concerns the large fraction of chaotic frequencies produced by generators that are unused when transmitted via the transmission carrier as lying outside the payload bandwidth of the information signal. To solve the technical problem, as the information signal is being injected in the feedback loop, band pass filter matching the information signal's frequency band is inserted in the feedback loop before its transmission via the carrier. More particularly, a band pass filter is used having its centre frequency coinciding with the frequency of the information signal. Another solution is a band pass filter that matches the channel characteristics. Therefore, Applicant's claimed invention filters the chaos signal to match the frequency band of the information signal or the transmission carrier characteristics to send a narrow frequency band signal via the transmission carrier.

Kim, however, never suggests either of the aforementioned solutions that are addressed in Applicant's claims. Moreover, Kim is distinguishable because in Kim, the information signal is just added to the chaotic carrier but not injected into the dynamical system constituting the transmitter. The information signal to be encrypted, therefore, does not effect the dynamics of the encoder and the synchronization. Further, in Kim the overall system uses two transmission carriers: the "synchronization carrier" used to provide the driving signal of synchronization (noise signal) to the transmitter and the receiver; the "encryption carrier" used for the transmission of the encrypted information signal between the transmitter and the receiver. Therefore, Kim does not teach, disclose or suggest to filter the noise signal providing for the synchronization: with the characteristics of the "encryption carrier" when it is first destined to be transmitted via the "synchronization carrier," which has other characteristics; or with the characteristics of the information signal, which doesn't play a role in the synchronization. Moreover,

Kim does not teach, disclose or suggest “means for generating chaotic signals comprising a source producing a chaotic signal and provided with a feedback loop comprising means for generating time delay, and a non-linear circuit element, means for producing the encrypted information signal comprising a mixer circuit element to inject an information signal to encrypt the information signal, received on one input, into the chaotic signal propagating in the feedback loop, received on another input, wherein the feedback loop includes means for filter-forming to limit the spectrum of the chaotic signal to one or more spectrum bands.”

DeFries discloses a communication system that uses the noise signal that naturally occurs in transmission conduits between a transmitter and a receiver to encode an information signal. DeFries further discloses identifying and using the existing noise sustained structure for transmission coding negates the necessity to filter or change the spectral density profile of the information signal (DeFries, column 15, lines 63-67). Moreover, DeFries does not teach, disclose or suggest “[a] sender device for sending an encrypted information signal, the device comprising: means for generating chaotic signals comprising a source producing a chaotic signal and provided with a feedback loop comprising means for generating time delay, and a non-linear circuit element, means for producing the encrypted information signal comprising a mixer circuit element to inject an information signal to encrypt the information signal, received on one input, into the chaotic signal propagating in the feedback loop, received on another input, wherein the feedback loop includes means for filter-forming to limit the spectrum of the chaotic signal to one or more spectrum bands.”

Therefore, even if Kim were combined with DeFries, the resulting invention would still not include all of Applicant’s claimed limitations. And, therefore, there would be no motivation to combine Kim with DeFries. Moreover, by viewing the disclosures of Kim and DeFries, one can not jump to the conclusion of obviousness without impermissible hindsight. According to MPEP 2142, [t]o reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical ‘person of ordinary skill in the art’ when the invention was unknown and just before it was made. In view

of all factual information, the examiner must then make a determination whether the claimed invention 'as a whole' would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the 'differences,' conduct the search and evaluate the 'subject matter as a whole' of the invention. The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." Applicant submits that without first reviewing Applicant's disclosure, no thought, whatsoever, would have been made for "[a] sender device for sending an encrypted information signal, the device comprising: means for generating chaotic signals comprising a source producing a chaotic signal and provided with a feedback loop comprising means for generating time delay, and a non-linear circuit element, means for producing the encrypted information signal comprising a mixer circuit element to inject an information signal to encrypt the information signal, received on one input, into the chaotic signal propagating in the feedback loop, received on another input, wherein the feedback loop includes means for filter-forming to limit the spectrum of the chaotic signal to one or more spectrum bands."

Neither Kim, DeFries, nor the combination of the two, teach, disclose or suggest the limitations contained in Applicant's claim 1, as listed above. Since neither Kim, DeFries, nor the combination of the two, teach, disclose or suggest all the limitations of Applicant's claim 1, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's claim 1 is not obvious over Kim in view of DeFries since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claim that directly depends on claim 1, namely claim 10, is also not obvious over Kim in view of DeFries for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejections for claim 10 is respectfully requested.

B. It is asserted in the Office Action that claims 5 and 7 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over Kim, in view of U. S. Patent No. 5,379,346 issued to Pecora ("Pecora"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

Applicant's claims 5 and 7 depend on amended claim 1. Applicant has addressed claim 1 regarding Kim above in sections I and II(A).

Pecora discloses a communication system comprising synchronizable chaotic systems using cascaded transmitters and receivers. Pecora further discloses a system with two transmission carriers between a transmitter and receiver. Additionally, it is an object of Pecora to provide an improved device that relies on wide frequency band synchronized signal. Pecora, however, does not teach, disclose or suggest "[a] sender device for sending an encrypted information signal, the device comprising: means for generating chaotic signals comprising a source producing a chaotic signal and provided with a feedback loop comprising means for generating time delay, and a non-linear circuit element, means for producing the encrypted information signal comprising a mixer circuit element to inject an information signal to encrypt the information signal, received on one input, into the chaotic signal propagating in the feedback loop, received on another input, wherein the feedback loop includes means for filter-forming to limit the spectrum of the chaotic signal to one or more spectrum bands."

Therefore, even if Kim were combined with Pecora the resulting invention would still not teach, disclose or suggest "[a] sender device for sending an encrypted information signal, the device comprising: means for generating chaotic signals comprising a source producing a chaotic signal and provided with a feedback loop comprising means for generating time delay, and a non-linear circuit element, means for producing the encrypted information signal comprising a mixer circuit element to inject an information signal to encrypt the information signal, received on one input, into the chaotic signal propagating in the feedback loop, received on another input, wherein the feedback loop includes means for filter-forming to limit the spectrum of the chaotic signal to one or more spectrum bands."

Since neither Kim, Pecora, nor the combination of the two, teach, disclose or suggest all the limitations of Applicant's claim 1, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's claim 1 is not obvious over Kim in view of Pecora since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claim that directly depends on claim 1, namely claims 5 and 7, are also not obvious over Kim in view of Pecora for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejections for claims 5 and 7 are respectfully requested.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending, namely 1-10, patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

PETITION FOR EXTENSION OF TIME

Per 37 C.F.R. 1.136(a) and in connection with the Office Action mailed on October 22, 2004, Applicant respectfully petitions the Commissioner for a one (1) month extension of time, extending the period for response to February 22, 2005. The Commissioner is hereby authorized to charge payment to Deposit Account No. 02-2666 in the amount of \$120.00 to cover the petition filing fee for a 37 C.F.R. 1.17(a)(1) large entity. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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Dated: February 15, 2005

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage in an envelope addressed to: Mail Stop Amendments, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on February 15, 2005.


Jean Svoboda